SIGNOR SARTI'S

FLORENTINE

ANATOMICAL MODELS.

POPULAR

DESCRIPTION OF TWO FULL-LENGTH FIGURES,

VENUS & ADONIS,

ILLUSTRATIVE OF THE

ANATOMY OF THE HUMAN FRAME.

CATALOGUES, SIXPENCE.

INTRODUCTION.

At the present time every branch of science is cultivated with the greatest assiduity, and we do not find, as in darker ages, that the knowledge which more especially belongs to one class of men, is confined entirely to that order; but a general acquaintance with its mysteries is now considered so indispensable, that its more prominent details are inserted even in the elementary school books, and the urchin, even before he enters on his Cordery or his Nepos, is expected to have a knowledge of the action of the heart, stomach, and viscera, and some inkling of the process by which oxygen transforms venous into arterial blood. It is not to medical men alone that the advantages of these representations are tendered. All persons must be more or less interested in the details of anatomical study; for by the inspection of these imitations of the structure of the human body, a thousand prejudices and fallacious ideas will be exploded. There are a hundred accidents against which we might guard; a hundred incipient diseases which we might nip in the bud, did we but possess a knowledge of the anatomy of our frame. Thousands of valuable lives fall an annual sacrifice to vicious habits, such as *tight lacing*, in which no one would indulge, could they but see the consequences they entail. "Thirty-one thousand and ninety English women died in one year from the effects of producing a spider waist: will not this impressive fact induce persons of rank and influence to set their countrywomen right in the article of dress, and lead them to abandon a practice which disfigures the body, strangles the chest, produces nervous and other disorders, and has an unquestionable tendency to implant an incurable hectic malady in the frame?"—*Andrew Combe, M.D.* In addition to the practical benefit derived from such knowledge, these Figures afford a means of gratifying a laudable curiosity without having the feelings of the most delicate injured by the obtrusion of any thing disagreeable. What curiosity can be more natural, what can more nearly concern us, than to be intimately acquainted with that frame-work which is the organ of the mind, the instrument by which it acquires all its ideas, which it employs in all its operations, and on the order or derangement of which, so much of our happiness depends.

We admire the steam-engine—it is worthy of our admiration—it is one of the greatest and most useful inventions of man; but man is a machine, that for mechanical arrangement and accurate adaptation, as far surpasses it as a natural plant excels an artificial flower. There is nothing like man in organic matter. He bears *upon him* and *within him* the impression of his Almighty Creator. No man can be an atheist who understands the structure and laws of his own body. The human body is composed of parts; each part constitutes a separate economy depending on the whole, and the whole is sustained by its parts. Internally there is a strong frame-work of

bones, and on these the superstructure is built; over the bones is laid a thick bed of muscular flesh, in regular thin layers, composed of long slender fibres, each layer acting like a pully, raising and depressing the bones at the will of the individual. To the extremity of each of the deep-seated muscles, (over the bones) a piece of strong white tendinous cord is attached and inserted into the bone, by which it is moved and motion is performed; the joints are mechanically constructed, and nicely adapted to each other, and attached by ligamentous bands that bind them together and prevent dislocation. In the bones, in the muscular flesh, and in every part of the body, blood vessels, composed of arteries and veins, ramify in every direction, from the thickness of a child's wrist to an almost imperceptible thread. The arteries convey the oxygenized blood to every part of the body, to repair its waste, and cause it to grow. The veins return the carbonized blood back to the heart, unfit for nutrition, to be re-oxygenized by the inhalation of atmospheric air in the lungs, and deprived (by expiration) of the carbonic acid gas and other noxious vapours, that prove it destructive to animal life.

In the abdomen, or belly, we have the stomach, bowels, liver, spleen, pancreas, and kidneys, each and all performing their separate work with silence, order, and harmony. The stomach receives the masticated food, and, by its gastric juice, digests it. It requires about four hours to complete healthy digestion. The liver pours its bile into the duodenum, or first gut, assists digestion, separates the nutritious from the excrementitious aliment, and aids the expulsion of the latter. In the upper region of the bowels, the lacteals, (little absorbent vessels) suck the nourishing part of the food, and send it, by the mesenteric glands, into the receptacle of the chyle; it then passes into the chyle duct, transformed into a milky fluid, and descends, by muscular action, contrary to the laws of gravity, until beneath the left shoulder it oozes into the left subclavian vein, and mingles with the blood.

In the chest we have the lungs, composed of delicate cells and blood vessels, receiving and expelling the respired air. The circulating fluid passes from the heart into the lungs, and is there exposed to the action of the air we breath. It parts with the carbonic acid, and watery vapours which it imbibed in circulation, and absorbs oxygen; changes from a dark purple to a bright scarlet red, returns to the heart, and is sent, by the simultaneous action of the arteries, into every part of the body, to nourish and repair it. This extraordinary process never ceases till we die. In every age and clime it proceeds with the same regularity, without our consciousness or will. There are about twenty-five pounds of blood in a full-grown man. In the hollow of the skull we have the brain—the most mysterious organ in nature. It is divided into two hemispheres, several lobes, and enclosed in three membranes. We have two distinct brains—the cerebrum before, and the cerebellum behind; the spinal cord is a prolongation of the brain, enclosed in twenty-four bones, joined together by intermediate cartilages, that

render it flexible, and by the nicest mechanism, prevents spinal compression. From the brain and spinal cord numerous nerves extend in every direction, from the thickness of the little finger, to the finest gossamer thread, giving life, sensation, and motion to every part of the body. The brain seems to be an animo-galvanic apparatus, in which the vital principle is generated, and the nerves are vital conductors. The nerves of the senses communicate between the mind and the external world through the medium of the brain; the spinal cord derives its functions directly from the brain, and gives motion and sensation by two sets of nerves, to the parts supplied. The heart and arteries pulsate by nervous power, received from the brain, and are stimulated by the circulating blood. We move our bodies by nervous energy, derived from the spinal cord and brain. We see, hear, taste, feel, smell, eat, drink, digest, grow, and renew, by nervous influence, that has its *origin* in the brain. The mind resides in the brain. We cannot live, think, reason, judge, nor do any thing vital and rational without the brain. It is the material organ of the mind, by which she communicates with the external world, and without *it* she is a *nonentity*. It is her sanctum-sanctorum, where she resides in mysterious silence, and cogitates on nature and revelation, bounds in thought through universal space, roams from time to eternity, and bows with adoration at the footstool of the Eternal. To make the animal machine a little world, individualized and perfect, the external skin completely envelopes and preserves it in complicated unity, and is beautifully finished by the almighty hand of our infinite Creator. The animal machine is self-preserving and self-propagating. The blood circulating in the body is deposited in minute quantities, wherever it is required, and supplies the bodily waste and repairs its injuries, and all the parts of the body are composed of blood. As we begin to grow old the organs that form the blood become diseased, deteriorate its quantity and quality, and render it unfit for animal nourishment; hence the progress of decay with advancing age. The chemical analysis of the human body teaches us that the *rich* and *poor man*, and the *lower animals*, are composed of the same *simple elements*. A few gases, in varied combination, constitute the greater portion of the animal frame. Is it of these gases that *man* is so *vain* and *proud?* Is it only to increase their *volumn* that he explores every portion of the globe for luxuries to sate his voluptuous appetite, to add a few more atoms to his flesh, and a few *pounds* of *lime* to his bones? Let the pampered lordling who is proud of his status be told that 63 parts in the 100 of his bones, are composed of lime in combination with acids, and we may make him humble. Let female beauty be told that the red part of the blood which flushes her cheeks is composed of iron, in combination with oxygen, and we may cure self-idolatry. Let the vain man of genius be told that his large, lofty, prominent brain, is chiefly composed of soda, lime and ammonia, combined with phosphorous oxygen, and a small portion of sulphur, and we may humble his intellectual vanity. Yet

these statements are true; for they are founded on chemical analysis that cannot err, and are as immutable and correct as mathematics. The human mind is immaterial and invisible, and cannot be analyzed by chemical laws;—its composition shall therefore remain for ever unknown to the *peasant* and *philosopher*.

The admirer of nature can here investigate the interior of the cavities, and trace the hand of the great Creator throughout the noblest of his works. The minds of youth can be early impressed with a truth that forces itself upon us the closer we examine, that "we are fearfully and wonderfully made." The fair sex, who have now almost burst asunder the shackles which were unjustly imposed upon them in comparatively barbarous times, can here follow the same system of education, and make themselves acquainted with a branch of knowledge from which they have hitherto been excluded.

In proof of the merit of these productions, as works of art and fac-similes of nature, the British Government, on the recommendation of the late lamented Dr. Birkbeck, Mr. Lawrence, and other eminent medical men, authorized for the national benefit, the *free* admission into England of these models, together with others belonging to the artist and proprietor, Signor Sarti, who, 12 years ago, was the first man to introduce into England, Anatomical Models for public inspection and improvement. In 1838 he imported a large collection of Anatomical Models, sufficient to lay the foundation of a Museum of Anatomy. The free promulgation of Popular Anatomy, is Signor Sarti's chief desire. To communicate in an unobjectionable form to all classes, and especially to those whose limited means exclude them from other facilities, the knowledge of man's physical constitution, and in consequence, his relationships to the physical world, and to his fellows, is the highest ambition of the proprietor.

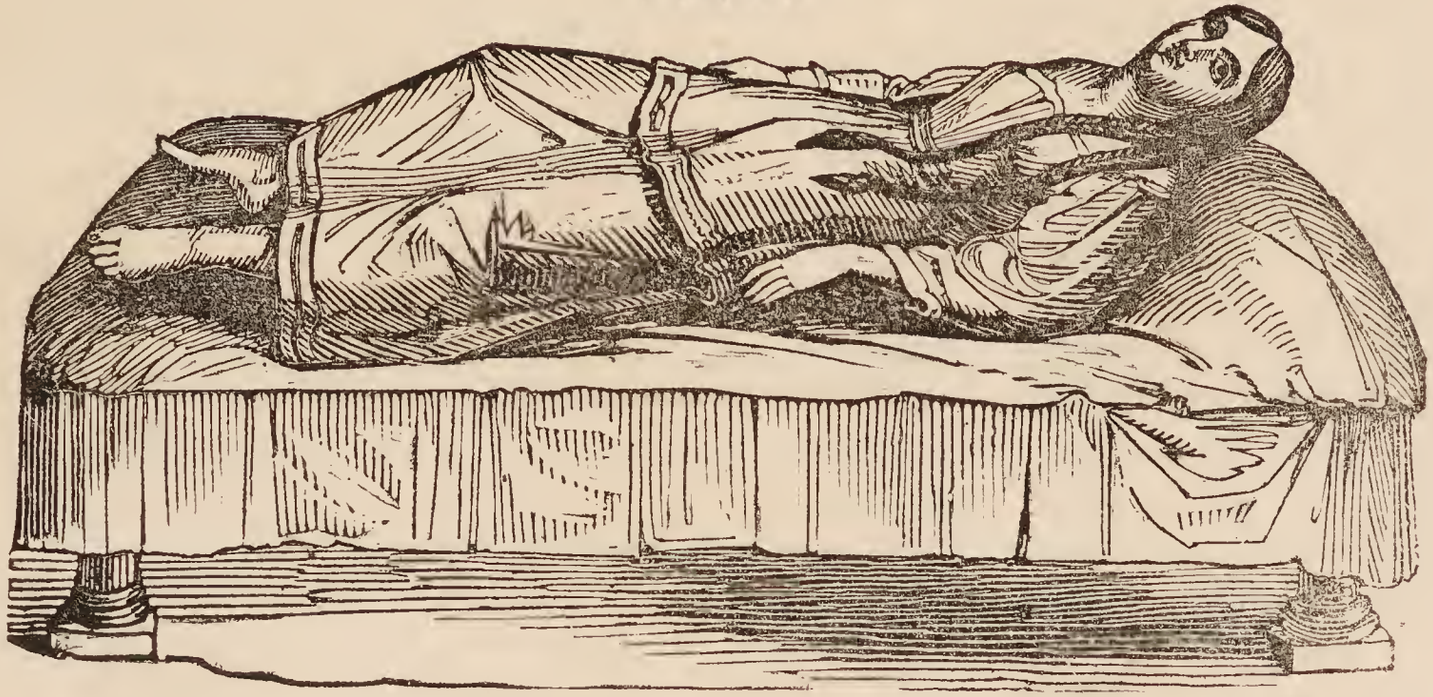
"TO THE COMMISSIONERS OF HER MAJESTY'S TREASURY.

"My Lords,—*I have had the pleasure of inspecting the principal parts of the splendid Anatomical Figures and separate Organs referred to in the accompanying Petition, addressed to your Lordships, by Antonio Sarti, the importer. To all the allegations respecting the accuracy and capabilities of these exquisite imitations of human structure, I fully accede. I believe they are admirably calculated to extend the knowledge of Anatomy, without creating either difficulty or disgust, and that they are especially adapted to attract the attention and inform the minds of popular audiences, to whom, I may observe, it is the opinion of the best informed individuals of the Medical Profession, Anatomical knowledge ought to be imparted. Indeed, I have not the least doubt that when these delightful productions of the Modeller in Wax are rendered accessible, they will be eagerly sought for the purpose of annexing to some great system af professional or popular instruction. I need not add, that I feel confident it will be found consistent with the spirit of the present enlightened Government to relieve these Works of Art, as instruments of Education, from all fiscal claims properly demanded upon imports of a merely commercial character. I remain, my Lords, very faithfully yours,*

"*October 23d*, 1838." "GEORGE BIRKBECK.

In the description which will follow of the Figures, great minuteness of detail will be avoided, as the whole of this pamphlet could be filled with an account of either of them. A short summary only can be given, the remainder must be left to oral description.

VENUS.



"There is no inherent indelicacy in the human figure. It is the workmanship of the Creator, the temple of the mind, and there is impressed on it a beauty of form, and an elegance of proportion, that render it capable of exciting the most pure and refined impressions in a cultivated mind. Where indelicacy is felt, its source must be looked for, not in the object, but in licentious feelings, or in a perverted or neglected education in the spectator. That individual who is able to associate only impure ideas with the most exquisite specimens of the Fine Arts, resembles a man in whom the aspect of a rich and beautiful domain should excite only feelings of envy, cupidity, and discontent."—*Combe.*

VENUS.

This is a composite figure, a model of the cunningest pattern of excelling nature, and equals in loveliness of form the ancient celebrated statues. It is divisible; and in its divisions the whole internal structure of the human body is correctly developed. The labour bestowed by the artists in perfecting it, may be judged of when it is stated, its construction occupied fifteen years, and not less than seven hundred and thirty-six subjects were dissected for its completion.

The skin from the whole of the anterior surface of the body and extremities being removed, there is seen on one side, the parts which lie immediately beneath the integuments; and the other, those more deeply situate.

On the right side of the face of the figure, we notice the muscles which give so much expression to the human countenance, and which have been beautifully described by Lavater, in his work on Physiognomy. Around the eye a circular muscle is spread, called the *orbicularis palpebrarum*, for the purpose of closing the lids. That which opens them again is placed in the orbit, and cannot here be seen. On the lips also a similar layer of fibres is seated, by which we are enabled to close them firmly when occasion may require.

On the upper part of the nose may be observed the *pyramidalis nasi*, a muscle that serves to draw the skin of the nose upwards and outwards, by which the nostril is dilated, connected above with the *occipito-frontalis*, a single broad muscle that covers the cranium, pulls the skin of the head backwards, raises the eyebrows and wrinkles the skin of the forehead; and on the side the *compressor-narium*, a muscle of the nose that compresses the sides towards the partition of the nostrils when we want to smell acutely. It also corrugates the nose in expressing certain passions. Leading from the cheek-bone to the angle of the mouth, may be noticed the greater and smaller *zygomatic* muscles, the strong action of which are more particularly seen in laughter, rage, and grinning, closely connected with the *levator labii superioris*, a muscle of the mouth situated below the lips, and *anguli oris*, a muscle situated above the mouth, which draws the corner of the mouth upwards, and makes that part of the cheek opposite the chin prominent as in smiling. Below the lip on the lower jaw the *depressor*, a muscle, the office of which is to pull down the part to which it is attached, and *levator*, inducing a directly contrary action, can be seen with a small muscle, called *orbicularis oris*, situated around the mouth, and is that muscle which contracts the lips. If we now look a little further backwards,

we see the parotid or salivary gland, placed in front of the ear, and sending its excretory vessel, the stenonian duct, over the masseter muscle, (the use of which is to raise the lower jaw, and to assist in the act of chewing,) across the face, when it turns inwards, and piercing the buccinator, (or trumpeter's muscle) supplies the mouth with saliva. Emerging from the substance of the gland, and running in different directions across the face we observe the portio dura, (one branch of the 7 pairs of nerves,) called the pes anserinus, from its many interlacements. These, with some others not quite so prominent, draw the features in various directions, and thus betray the emotions of the mind.

Nervous filaments above and below the orbit, emerging from the upper and lower opening of the sockets of the eye, may be seen distributed to the surrounding parts—these are nerves which are particularly affected in that painful disease called *tic doleureux*. The apertures in the bones from which they emerge may be seen on the left side.

The face is supplied with blood by the temporal and facial arteries. The *facial* is a branch of the external carotid, and may be seen turning over the margin of the lower jaw, close by the edge of the masseter muscle; it then takes a tortuous course, and terminates on the side of the nose. Some of its branches are visible; among these may be named the arteries of the lower lip, and circular arteries, upper and lower, which circulate around the mouth, and give a vermillion colour to the lips. The *temporal artery* is one of the terminating branches of the external carotid. Its anterior division is here apparent on the temple, and an offset which it sends across the face by the side of the parotid duct. The facial *veins* accompany the arteries when of large size, but afterwards become dispersed in various directions.

On the *left* side of the face and neck many parts have been removed, to show the course of the great arteries and nerves situated in this important part of the body. The anatomy here is very difficult to be described properly, on account of the extreme minuteness of many of the parts, and the long names given to the muscles. The bones of the face and side of the head are cleaned, showing the openings from which veins issue, or to which arteries proceed. The half of the lower jaw is taken away, so as to expose the tongue with the parts adjoining, and the zygomatic arch of the temporal and cheek-bones are left after the temporal and other muscles have been removed.

At the lower and front part of the neck the *trachea* or *windpipe*, is seen to join with the tongue or organ of voice; above which is the *os hyoides*, or that bone from whence the muscles of the tongue proceed, connected with the latter by muscles and ligaments. The tongue is joined to the bones just mentioned by the *hyo-glossus* and *genio-hyo-glossus* muscles, parts of which may be traced in the figure, together with one of the salivary glands. The course of the common carotid artery can now be traced. It is cut just before it separates

into the external and internal carotid, the one going to the outside, the other to the inside of the cranium. Very little of the *internal carotid* is here seen, as it ascends almost directly upwards to the base of the skull and enters the carotid foramen.

The *external carotid* extends from the point of division to the neck of the condyle, or cup of the lower jaw, where it separates into its terminal branches. In this course it gives off eight offsets, all of which may be readily seen; 1st, The *superior thyroid* from the anterior part runs downwards and inwards, and after distributing branches to the os hyoides, larynx, and adjacent muscles, terminates by anastomosing with its fellow of the opposite side in the thyroid body, or that prominence called apple of Adam; 2d, The *lingual* or artery of the tongue, is chiefly distributed to the tongue, and terminates anteriorly in the ranine artery; 3d, The *facial* artery gives off some branches to the parts beneath the jaw before it gets upon the face, and takes the course already mentioned; 4th, The *ascending pharyngeal* runs inwards and supplies the pharynx; 5th, The *occipital* takes a course backwards at the upper part of the neck and base of the skull, and then arches up towards the vertex to ramify upon the pericranium; 6th, The *posterior auricular* runs up behind the ear, and there dividing, becomes spent in that region; 7th, The *stylo-mastoid* is a small branch which supplies that muscle and parts of the ear; and the *internal maxillary* artery, which proceeds from the stylo-mastoid, is of considerable size, and is one of the terminating branches of the external carotid. It passes inwards between the two pterygoid muscles, and under cover of the ramus of the jaw, enters the pterygo-maxillary fissure, passes along the infra-orbital canal, and finally emerges on the face to supply many of the small muscles. The branches it gives off are very numerous and important, as they supply the meninges or coverings of the brain, the lower and upper jaw, the teeth, and the parts about the palate and nose; 8th, The *temporal* is the other terminating branch of the external carotid. It passes through the substance of the parotid gland, over the zygoma, ascends in front of the external ear, and terminates upon the side of the head. These arteries are of the greatest importance, and must be studied most minutely before any operation can be performed on this part of the body.

The nerves here displayed consist of the *lingual* or *ninth pair*, which emerge from the cranium by the anterior condyloid foramina arch across the upper part of the neck, giving off the ninth pair of nerves, and terminate in the muscles of the tongue. The gustatory nerve, on which the sense of taste depends, is a branch of the third portion of the fifth pair. It pursues a course forwards under the mucous membrane of the mouth, reaches the side of the tongue, and, dividing into several filaments, terminates in the papillæ of that organ. Branches of the inferior maxillary nerve may be seen distributed to the lower jaw and parts in its immediate neighbourhood. By the side of the common carotid artery, and passing downwards towards the thorax, runs the eighth pair, on which is supposed to depend the

sympathy always observed between the stomach and the brain. The nerves at the back of the lower part of the neck are those of the cervical plexus, formed by the union of several from the spine. It sends branches to supply the upper extremities, and other parts more or less in its vicinity.

The skin being removed from the surface of the *chest* and *abdomen*, we see the superficial blood-vessels and nerves ramifying in various directions. Along the median line, and extending from the pubis through the umbilicus to the ensiform cartilage, may be seen a white line formed by the union of many expansions, and called the *linea alba*, or white line. On either side of this, the two straight muscles of the abdomen are situated, separated into several bands of fibres by white tendinous ligaments, and enclosed in sheaths of membrane. Extending from the rectus, and covering the sides of the parietes of the abdominal cavity, is placed the *external oblique* muscle, with its fibres running downwards and forwards. These, with other muscles seated beneath, assist materially in respiration, and in many other actions of paramount importance. Over their surface run branches of the *external epigastric* and other arteries which anastomose with those which come from the external mammary.

BREAST.

On the chest, and lying on the great pectoral muscle of either side, is placed the mamma. The breast consists of common integuments and fat, with glands and vessels for the purpose of secreting milk, and discharging it for the first nourishment of the child; on the middle of each breast is a small eminence which the child takes into its mouth, and a vacuum being formed by its suction, the external air pressing on the breast, forces the nutritious fluid into the child's mouth. From the variety of parts of which the breast is composed, it is liable to various diseases, as inflammation, suppuration, and cancer. The glandular structure of the breast is seen entirely separated from the muscle. Cancer frequently attacks the upper or fatty portion of the breast. After a certain continuance of this disease, it spreads its baneful influence so deep and extensively, that the operation is likely to do no good unless the whole of the diseased portion, in all its ramifications, be cut out, (in other words, before the muscle beneath and around becomes contaminated,) the malady will assuredly return.

The *arms* are now denuded of the skin and tendinous expansions, so that we can see the muscles, and can trace the blood-vessels and nerves to the ends of the fingers. The fore-arm on the right side is in a state of pronation, while that of the left is left supine, in order that the anatomy of both surfaces may be visible. If we look at either of them, we see the large belly of the *biceps* muscle on the front part of the upper arm, and passing downwards, to be inserted into the radius. This is the principal flexor of the fore-arm, and is felt very prominent when we forcibly bring the hand towards the

shoulder. A small portion of the muscle which extends the fore-arm may be seen by the side of the biceps lying at the back of the arm.

Looking at the *left* arm of the figure below the elbow, the chief flexors of the wrist and fingers can be made out, with some of the pronators and supinators. Thus we see running along the radial side the muscle that bends the fore-arm back, and on the opposite, that muscle which reverses it. We have also the flexor carpi radialis, which serves to bend the hand, and its oblique direction assists in its pronation, and ulnaris, a muscle situated on the fore-arm that helps to bend it. The more superficial flexor of the fingers, *flexor digitorum sublimis*, with others which act upon the phalanges, pass over the wrist, where they are bound down by fibrous bands called the annular ligament, and then dividing into slips or tendons, are inserted into the bones they are to move. Some of the small muscles of the thumb and little finger may be seen in the palm of the hand, bound down by the strong palmar fascia.

On the right fore-arm many of the extensor muscles of the hand and fingers may be noticed, among which may be mentioned the *extensor carpi ulnaris*, which assists in extending and bringing the hand backwards, and the common extensor of the fingers. The latter is fleshy and fibrous above, but at the wrist it divides into four tendons, which go to the posterior parts of the fingers.

The blood-vessels of the arm are very numerous. The larger canals can be distinctly traced. The *brachial artery* is seen lying on the brachialis anticus, bracelet or muscle of the wrist, at the inner border of the biceps. Just above the bend of the elbow it has the median nerve to its inner side, and the internal cutaneous nerve superficial to it. At about a finger's breadth below the bend of the elbow it divides into two branches, called the radial and ulnar arteries. The *ulnar* or larger bone of the fore-arm, runs down the fore-arm, at first covered by the pronator teres, or that which turns the radius, or smaller bones of the fore-arm inwards, flexor carpi radialis, before described, palmaris longus,—this muscle bends the hand, and may assist in its pronation—and flexor sublimis,—its use consists in bending the second joint of the fingers; but afterwards runs by the side of the flexor carpi ulnaris. At the wrist the ulnar artery passes over the annular or ring ligament, and coming towards the thumb, inosculates with the superficialis volæ sent from the radial. This curved part is called the superficial palmar arch, and from its convexity it sends off branches to supply the fingers. The radial artery passes downwards overlapped by the supinator longus, or that muscle which assists in rolling the radius outwards, inclines outwards at the wrist, and makes its final turn into the palm of the hand, between the two first metacarpal bones. In the palm it forms the deep palmar arch, and terminates by inosculating with the communicating branch from the ulnar.

The *veins* of the arm are either superficial or deep seated. The latter accompany the arteries, and are hence called the venæ comites. The superficial veins arise from a plextus, or net-work of vessels

formed from the fingers and back of the hand. They run up along the borders of the fore-arm, and, according to their situation, they receive the names of radial cutaneous and ulnar cutaneous veins. At the bend of the arm they communicate with each other, with the median and deep-seated veins. It is of some importance to know their relative situation to the artery, as this is the usual place where blood-letting is performed in this country, and that vessel might be wounded.

The *nerves* of the arm are numerous. The *median* has been already mentioned in company with the cutaneous and brachial artery. The ulnar nerve may be traced downwards by the side of the ulnar artery, chiefly supplying the fingers. Other nerves may be noticed, the principal of which are branches from the *external cutaneous* and the *musculo-spiral.*

From the superior, wo now proceed to examine the inferior extremities. These are arranged in the same manner as the arms, the left leg being devoted to showing the superficial, the right the more deeply-seated parts. After having removed the skin from the anterior part of the thigh, we come to the *fascia lata*, a strong fibrous lamella which serves to bind down the muscles in their proper places. This is here stripped off; but we see on the outer part, the *tensor vaginæ*, a muscle which stretches the membranous fascia of the thigh, assists in the abduction of the thigh, and somewhat in its rotation inwards, which arises from the anterior superior spinous process of the iliac bone, and is inserted between two laminæ of the fascia lata, a thick and strong tendinous expansion which serves to keep the muscles, when in action, in their proper place, about two inches below the great trochanter. It assists the action of the other muscles by rendering the membrane tense, and also slightly acts as a rotator inwards.

Arising nearly from the same part of the ileum, but taking a different direction by crossing the thigh and running to the inner side of the tibia, or largest bone of the leg, may be observed a very beautiful muscle. This is the *sartorius*, or tailor's muscle, so named from an idea that it enabled the sons of the shears to cross their legs in the manner to which they are accustomed; but it more properly may be considered as one of the extensors of the lower leg. Occupying the centre of the thigh, may be noticed the *rectus femoris*, a large muscle taking its origin from the inferior spinous process of the ileum and brim of the acetabulum, so called because it resembles a saucer, and passing down to be inserted into the upper border of the patella, or knee-pan. On either side of the last named, a mass of circular fibres is arranged. These are the *vastus externus* and *internus*, which, together with the *crureus*, now hidden by the rectus, form the *triceps extensor cruris*, arising from the femoral bone, and inserted into the patella. These all extend the leg, and assist to preserve the erect position of the body.

If we now turn to the thigh, on the right side of the body of the figure, we notice that some of the muscles above named have been

removed, and that we are now enabled to trace the course of the vessels and the position of other muscles. It may be observed, that the bone does not run in a straight line through the centre of the thigh, but is differently situated with regard to the surface in particular portions. At the upper part, a large mass of muscles are seen at the inner side, over which the large vessels run. These are the *pectineus, adductor brevis, longus and magnus*, serving to bend the thigh by drawing it upwards and inwards, which arise from different parts of the pelvic bones to be inserted into the femoral. The manner in which the femoral artery pierces the adductor magnus is here beautifully shown. To the inner side of these is placed the *gracilis*, a long and slender muscle, taking its origin from the os pubis, to be inserted into the inner side of the tuberosity of the tibia. These draw the limb inwards when it is in an extended position. Part of the iliacus externus, a broad radiated muscle, is seen emerging from under Poupart's ligament to the outer side of the artery, and running towards its insertion into the smaller trochanter.

On the knee-joint, at the left side, the patella or knee-pan remains, and we see the manner of the insertion of its muscles and the formation of the *ligamentum patellæ*. On the right side these have been removed, so that the joint is visible, with a portion of the cartilages. Within is secreted an unctious fluid, from certain glands in the joint in which it is contained. Its use is to lubricate the cartilaginous surfaces of the articulatory bones, and to facilitate their motion.

Pursuing the examination of the muscles on the anterior surface of the left leg, below the knee, we come first to the *tibialis anticus*, a muscle of the foot situate on the leg; it bends the foot by turning it upwards, and at the same time turns the toes inwards—arising from the upper part of the external surface of the tibia, and running tapering downwards to be inserted into the first cuneiform bone of the tarsus. At its outer side is situated the *extensor proprius pollicis*, an external muscle of the great toe situate on the foot, running obliquely downwards, and its tendon passing under the ring ligament at the inner side of the back of the foot. The *long extensor of the toes* may be seen arranged exteriorly to this, with its four tendons passing under the annular ligament, and having the peroneus tertius, which assists in bending the foot, attached to its outer and lower part. At the inner side of the tibia, portions of muscles of the calf of the leg can be noticed, but these are much better seen in the other figure of the Adonis. Beneath the tendons, on the back of the foot, lies the *extensor brevis digitorum*, a small flat muscle which divides into tendons, inserted into the outer borders of those of the long extensor. These muscles act upon the tarsus or instep, and phalanges, or small bones of the foot, and effect the flexion of the foot and the extension of the toes.

In the description of the vessels of the lower extremity, it is necessary to begin at the upper part of the thigh. On the right

side, we see the *femoral* artery emerging from under Poupart's ligament, accompanied by the femoral vein and the crural nerve. It lies first on the inner border of the psoas muscle, a muscle helping to bend the body forwards, and in an erect posture assists in preserving the equilibrium of the body; then runs over the pectineus, which latter muscle serves to bend the thigh by drawing it upwards and inwards, and likewise assists in rolling it outwards; and adductor brevis, but separated from them by its branches and some veins, then it courses over the adductor longus, and, finally, may be observed running over the tendon of the adductor magnus, before it pierces that muscle to get into the popliteal space. In this course the artery is covered by the fascia lata, the inguinal glands, and in the middle of the thigh by the sartorius. The branches which the femoral artery gives off in this part are the external pudic, superficial epigastric, superficial circumflex ilii, with more to the adjoining muscles, and the profunda femoris; the greater number of these can here be distinctly traced.

After its transmission through the tendon of the adductor magnus, we lose sight of the arterial trunk, until below the knee we see the *anterior tibial artery* emerging from the back part of the leg, and lying on the interosseous ligament, a name given to muscles, ligaments, &c. which are between bones, between the tibia and fibula. We trace it downwards, becoming gradually more superficial, to the bend of the ancle, where it runs forward to the space between the first and second metatarsal bones, under the name of the *dorsal* artery. The *ramus recurrens* may be observed running on the anterior and lateral parts of the knee-joint, and anastomosing with the inferior articular branches from the popliteal.

The *veins* of the lower extremity generally accompany the arteries in their course, and are thence styled *venæ comites*. But some take totally different directions, and one in particular is of importance. The *vena sapheno major* takes its rise from a plexus, or net-work, on the back of the foot, runs upwards along the inner edge of the tibia, passes along the anterior and internal part of the thigh, emerges from the saphenous opening in the fascia lata, and then empties itself into the femoral vein, near Poupart's ligament. The great femoral vein lies at first behind the artery; but then, receiving the profunda and other branches, it inclines inwards and forwards, and at its termination in the external iliac vein lies to its inner side.

The *nerves* which supply the anterior part of the lower extremity —with motion and sensibility—are very numerous. The principal of those seen on this specimen are the anterior crural, the obturator, and the external cutaneous. On the upper part of the right thigh we see the *anterior crural* nerve emerging from under Poupart's ligament, and lying to the outer side of the femoral artery. It then divides into a lash of branches, some of which go to the surface to supply the integuments, and the others are more deeply situated. The cutaneous branches are seen more particularly in the left leg, when they have pierced the fascia lata, a thick and

strong tendinous expansion, and serves to strengthen the action of the muscles, by keeping them firm in their proper places, and are being distributed to the skin, in company with the external cutaneous nerve. The deep-seated branches are given to the muscles. One, after accompanying the femoral artery until it pierces the adductor magnus, runs down the leg in company with the saphenous vein, and it is hence called the *nervus saphenus major*. The obturator nerve is seen at the internal part of the right thigh, after it has emerged from the thyroid opening. It then divides into two branches which supply the contiguous muscles. On the lower leg, below the knee, the *musculo cutaneous* and *anterior tibial* nerves can be seen running downwards, and distributing branches to the muscles, and supplying the fore part of the foot and toes.

The whole of the parts which lie immediately beneath the skin having been examined, the anterior parietes of the chest and abdomen are removed, so that those cavities of the body can be brought into view. The relative position of the viscera may be accurately seen. On each side of the thorax, and filling the greater part of the cavity, are the lungs, each divided by deep fissures into lobes, that of the left into two, that of the right into three portions.

LUNGS.

The *lungs* are composed of a congeries of air cells, of a spongy texture, and are of a conical figure, having the base resting below on the diaphragm, and the apex extending to a short distance above the first rib. They are covered with a fine layer of serous membrane, called the pleura, which is detached in one place on the left lung to show its fineness and transparency. A layer of this tunic lines the anterior walls of the cavity, and often becomes inflamed in the winter season, constituting the disease called *pleurisy*. Between the lungs, at the anterior part of the chest, the heart, covered by its pericardium, is seen to protrude, with the aortic trunk ascending towards the neck. The vena cava descendens is also partly visible, making its way downwards, and receiving the subclavians with their tributary branches.

DIAPHRAGM.

Proceeding downwards, we see a portion of the diaphragm, with the mode of its attachment to the ensiform cartilage and lower ribs. The diaphragm is an internal tranverse vaulted partition betwixt the abdomen and chest, and is the most important organ in respiration: besides this, the diaphragm is not only useful in assisting to discharge fœcal matter and urine from the bowels and bladder, but to expel the fœtus from the uterus in porturition,—vomiting, hiccuping, yawning, crying, laughing, coughing, sighing, weeping, and indeed, every audible emotion of joy and fear are diaphragmatic actions. Below these a portion of the liver protrudes, overlapping

the stomach. The remainder of the abdominal cavity is hidden by the great omentum, which consists of four layers of peritoneum, having a great quantity of fat deposited between them, and branches of arteries and veins ramifying on their surface. Below this may be seen the bladder and uterus.

By next removing the anterior portions of the lungs, we can examine their internal structure, and the way in which the air and blood-vessels enter. The trachea or wind-pipe, a tube consisting of eighteen or twenty cartilaginous rings, united by an elastic membrane, divides into the *bronchi*, which ultimately terminate in the air cells. The arteries are, the pulmonary, which convey the blood from the heart to be oxygenated; and the bronchial for the nourishment of the viscus itself. The veins are, the pulmonary, to return the vivified fluid to the centre of circulation; and the bronchial, which terminate on one side in the vena azygos, on the other, in the superior inter-costal vein.

HEART.

Mechanism of the Heart.—On reviewing the mechanism of the heart every reflecting mind must be struck with the admirable adaptation and suitableness of its several parts, and also the harmony of its operations. How important is the least portion of its complex machinery! If but a thread connected with the valves be broken, or one of its slightest membranes burst; if a single valve omitted to fall down before the retrograde current of blood, or became inverted, the vital functions could no longer be carried on; the vast machinery of the whole animal frame would be immediately deranged, and death necessarily ensue! Who could suppose that an apparatus so complex, so easily deranged, and which is thrown into action considerably more than a hundred thousand times a-day, should yet continue, unimpaired, for fifty, eighty, or a hundred years? How insignificant and imperfect must appear the most admirable piece of mechanism constructed by man when compared to this! What piece of mechanism, exerting so much power, could bear such velocity for one year? Yet so perfect is this apparatus, and so well fitted is all its parts, that its rapid motions never, during health, disturb even the tender babe, in whose breast it beats perhaps a hundred and fifty thousand times a-day.

The *heart* is a hollow muscle placed between the lungs, and enclosed in the sac of the pericardium, or covering of the heart. This membrane consists of two layers; the external being fibrous; the internal, serous, and secreting the fluid of the pericardium. It is seen detached from the lower part, and firmly investing the great vessels above. The heart is placed obliquely in the centre of the chest, with its apex pointing to the left side.

The coronary arteries and veins are seen ramifying on its surface to supply its substance with the vital fluid: for the heart does not receive nourishment from the blood which is constantly cir-

culating through its interior. Nervous filaments are also seen distributed, and these come from the cardiac plexus of the sympathetic. Running down on either side may be observed the phrenic nerve, chiefly distributed to the diaphragm.

The *ventricles* are next opened, and we see that the walls of these cavities are of unequal thickness. On looking into the right ventricle we see the carneæ columnæ, or fleshy columns, which arise from the sides of the heart, and terminate in tendinous fibres, which are attached to the tricuspid valves to prevent the blood being forced backwards into the auricle. Other valves, called the *semi-lunar*, are attached round the edges of the arterial vessels, likewise to prevent the reflux of the stream. In the interior of the left ventricle similar fleshy columns are placed, having their tendons attached to the fine edges of the *mitral valves*, which prevent the blood from repassing into the left auricle. When the heart is removed, the windpipe is brought into view, with its bronchial terminations, beneath which the meat tube is seen running to the left of the stomach; also, vena azygos, and thoracic duct.

The *circulation of the blood* should be well understood by all our readers. After entering into the right auricle of the heart, it passes into the right ventricle, and when there, is prevented from returning by means of the tricuspid valves placed at the entrance of the auriculo-ventricular opening. It is thence propelled into the pulmonary artery, courses through the lungs to be subjected to the influence of atmospheric air, and being returned by the pulmonary veins, enters the left auricle of the heart. From this cavity it goes into the left ventricle, from which it is propelled with great force into the aorta, or principal arterial trunk, which, by means of its numerous offsets, conveys the vital fluid into every part of the frame. At the arterial extremities the venous system commences. The veins gradually increase in size as they approach the centre of circulation, and become united into the two venæ cavæ, which, by terminating in the right auricle of the heart, complete the chain of the circulation. The diaphragm is now removed, with the short ribs.

LIVER.

The position of the liver, overlapping the stomach, and its division into right and left lobes can be seen. The liver is one of the largest glands in the body, weighing in general from four to five pounds. The secretion in the liver differs from that in other glands in this, that it is not from *arterial*, but from venous blood. It is very little subject to disease in this climate. Those persons who are said to be bilious, are so in consequence of derangement of their stomach. In hot climates, as in India, the liver is very liable to inflammation, and sometimes matter forms in it, and bursts externally. Any irritation of the liver is apt to produce jaundice, which is just the absorption of the bile into the circulation, so that its yellow tint predominates over the red

colour of the blood. The liver is also occasionally subject to general enlargement, particularly in females, induced by the baneful practice of wearing tight stays, and a firm condensation, occasioning dropsy, principally in persons of intemperate habits, who have, by the use of ardent spirits, reduced it to a white mass, and cancerous growths now and then form in it, which can sometimes be felt by laying the hand upon the outside. On its upper surface may be observed the suspensory ligament, formed by a duplicature of the peritoneum, and serving to suspend it in some measure in its position. The parts on the under surface can be examined when the viscus is removed, and these consist of the gall-bladder with its ducts, the hepatic vessels, vena porta, the vena cava, and the remains of the umbilical vein. The peritoneal investing tunic is made apparent in different parts by being detached from the surface. By removing the omentum, or fatty covering attached to the intestines, we can now examine the position and relations of the stomach, together with the more deep-seated organs. The œsophagus joined to it above, the spleen, the use of which is not known, attached to its left, the duodenum, the first portion of the small intestines, to its right extremity. The par vagum and sympathetic nerves, with the coronary arteries and veins, ramify upon its surface. By taking off a portion of its anterior wall, we see that it is a hollow muscular viscus, lined throughout with a mucous coat thrown into minute rugæ, and having a red villous appearance.

STOMACH.

The process by which food is converted into "*vital fluid*," may be interesting to the general visitor.

First of all is introduced into the mouth animal and vegetable food: with the teeth it is masticated; by means of the tongue it is rolled about in the mouth, by which it comes in contact with the several excretory ducts of the salivary glands, which open on the internal surface of the mouth. These ducts, by virtue of their sensibility, become aware of the presence of a stimulus—the food. The arteries thus stimulated bring a greater quantity of blood to the glands, and separates from that blood an increased quantity of that juice or secretion which is called saliva. The nutritious bolus, then, having been thoroughly masticated until it has been well mixed up with saliva, is jerked into the throat, by which it is propelled into the *stomach*. The presence of food in the stomach stimulates the action of the mucous coating, which pours out gastric juice from all sides of the mucous membrane, falls upon its surface, and converts the food into chyme, which floats away to the pylorus, or lower part of the stomach; where it is examined, as it were, by the sensibility of that valve, and, reported all right, is admitted into the duodenum. The whole quantity is usually converted into chyme in about four hours. The chyme in the duodenum has precisely the same effect

upon the excretory ducts of the liver and pancreas which open into the duodenum, as the food had in the mouth upon the excretory ducts of the salivary glands. Those glands so stimulated pour out an increased quantity of their individual secretions, viz., bile and pancreatic juice. The surface of the bowels, too, pours out an increased quantity of fluid called intestinal juice. The chyme mingling with these juices, another great change is effected. The chyme is no longer chyme, it has lost its identity; and the result is a milky fluid, called chyle, destined to become blood; and an excrementitious matter, the dross, destined to be expelled from the body.

When the stomach is removed, the entire course of the aorta and vena cava can be traced, with the origin of their numerous branches. The semi-lunar ganglia, the solar plexus, and the net-work of filaments which complete the chain of sympathetic union, the position of the kidneys, with their internal structure, the supra-renal capsules, the course of the ureters, or canals for the passage of the urine, the duodenum and pancreas, with nerves, arteries, and veins too numerous to mention.

UTERUS.

The uterus and its appendages must next be examined This organ lies at the lower part of the abdomen and above the bladder, which is here seen contracted, and may be opened to show its internal appearance. By the sides of the uterus, and enclosed in folds of the peritoneum, the ovaries are placed, having the fimbriated extremities of the Fallopian tubes placed in juxta-position. Some have supposed that the texture of the ovaries were glandular; others who have examined them with more care, assert that they are ovaria in the literal acceptation of the term, and include a number of vesicles, or ova, to the amount of twenty-one or two, of different sizes, joined to the internal surface of the ovaria by cellular threads or pedicles, and that they contain a fluid which has the appearance of thin lymph. It is one of these minute vesicles, being grasped by the fimbriated extremities of the Fallopian tubes when conveyed into the uterus, that forms the embryo. Removing the anterior part of the uterus, the membranes are exposed. These enclose the liquor amnii, or water in which the fœtus is suspended. By taking these away, the unborn child is seen in its natural position, and connected with the mother by the convoluted vessels of the umbilical cord, consisting of two arteries and one vein. The embryo is furnished by nature with all things proper for its support; and, as it increases in size, its nourishment also is found to increase with it. As soon as it first begins to grow in the uterus, that receptacle, from being very small, grows larger; and, what is more surprising, thicker every day. The sides of a bladder, as we know, the more they are distended, the more they become thin; but here, the larger the uterus grows, the more it appears to thicken. Within this the

embryo is still farther involved in two membranes, called the chorion and amnion, and floats in a thin transparent fluid, upon which it seems in some measure to subsist. However, the great storehouse from whence its chief nourishment is supplied is called the placenta, a red substance somewhat resembling a sponge that adheres to the inside of the uterus, and communicates by the umbilical vessels with the embryo. These umbilical vessels issue from the navel of the child, and are branched out upon the placenta, where they, in fact, seem to form its substance, and if it may be so expressed, to suck up their nourishment from the uterus, and the fluids contained therein. The blood thus received from the uterus by the placenta, and communicated by the umbilical vein to the body of the embryo, is conveyed to the heart, where, without ever passing into the lungs, for the necessary change of purification, as in the born infant, it takes a shorter course; for entering the right auricle of the heart, instead of passing up into the pulmonary artery, it seems to break this partition, and goes directly through the body of the heart, by an opening called the foramen ovale, and from thence to the aorta, or great artery, by which it is driven into all parts of the body. Thus we see the placenta in some measure supplying the place of lungs; for as the little animal can receive no air by inspiration, the lungs are therefore useless. But we see the placenta converting the fluid of the uterus into blood, and sending it, by the umbilical vein to the heart; from whence it is despatched by a quicker and shorter circulation through the whole frame. In this manner reposes the embryo, supplied by that nourishment which is fitted to its necessities, and furnished with those organs that are adapted to its situation. As its sensations are but few, its wants are in the same proportion; and it is probable that a sleep, with scarce any interval, marks the earliest period of animal life.

BRAIN.

The brain is that large organized mass which, along with its enveloping membranes, completely fills the cavity of the skull. It is the seat of thought, of feeling, and of consciousness, and the centre towards which all impressions made on the nerves distributed over the body are conveyed, and from which the mandates of the will are transmitted by other nerves, to put the various parts in motion.

When the fleshy scalp has been removed, we come to the surface of the skull covered by its proper periosteum, here called *pericranium*. On it may be seen ramifying some branches of arteries and veins, chiefly from the temporal and occipital, and portions of the occipito-frontalis and temporal muscles.

When we examine the interior of the basin of the skull when removed, we see that it is lined throughout by a dense firm membrane called the *dura mater*, which is partially detached from the bone. Two other tunics invest the cerebrum, and may be seen on the surface of its convolutions. These are the tunica arachnoides and pia

mater, the latter of which dips down between the convolutions and lines of the ventricles.

The brain is next taken out from the cavity of the skull, and we see upon its superior surface, and running from before backwards, the superior longitudinal sinus, or vein of the cerebrum. The whole of its exterior is also here divided into numerous convolutions, usually very irregular in shape and direction, but which are considered as of importance by phrenologists.

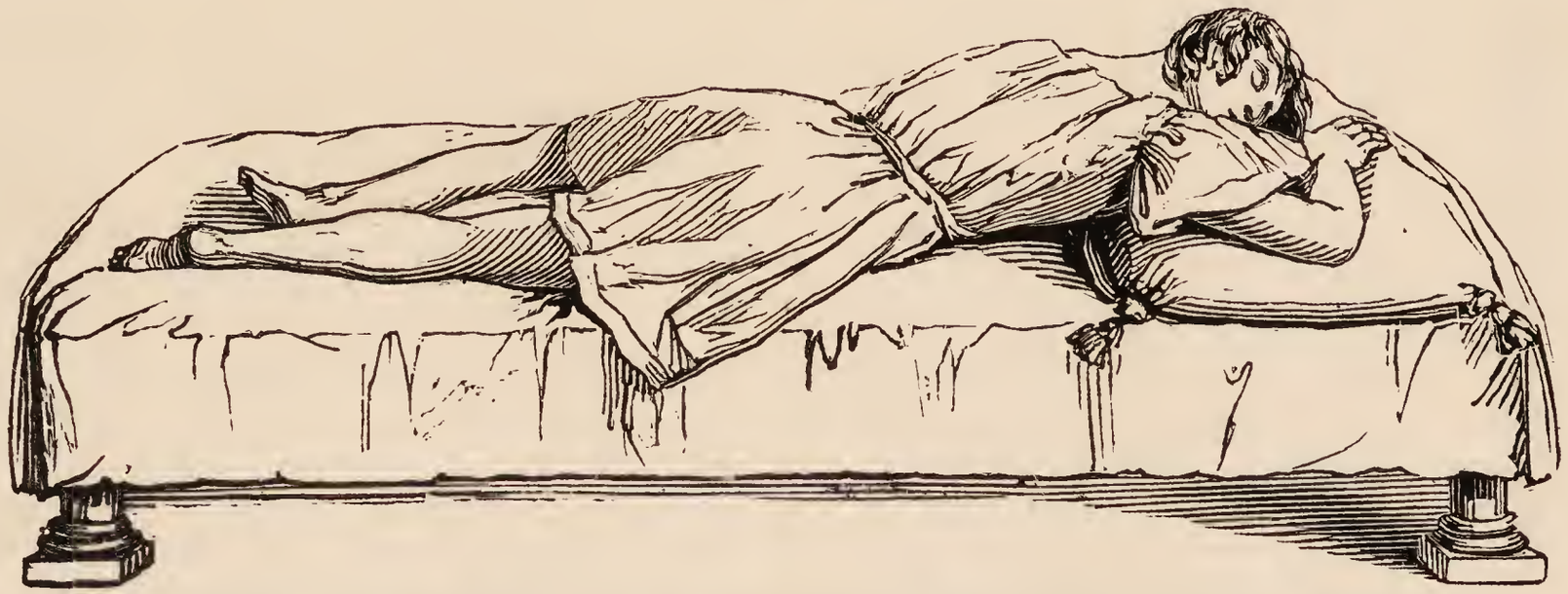
The brain must now be reversed in order to see its inferior surface, which presents many peculiarities of great interest. Along the median line at the anterior part may be observed a fissure, which lodges the falx cerebri, and marks the division of the brain into two halves, or, as they are called, hemispheres. Each portion is also divided into an anterior, a middle, and a posterior lobe, which latter is separated from the cerebellum or little brain by the tentorium. If we now examine the under surface, commencing from the front and proceeding backwards, we shall notice first, two flat bands of nervous matter lying on each side of the longitudinal fissure. These are the olfactory or first pair of nerves. A little posterior a groove running outwards is visible, called the fissura Sylvii, and lodging the middle artery of the brain. Next in order of succession are the *commissure* of the *optic nerves*, the *tuber cinereum*, *corpora albicantia*, *pons Tarini*, *crura cerebri*, *pons Varolii*, *cruri cerebelli*, *medulla oblongata*, and the origins of the cerebral nerves. Vessels are also here situated, coming from the internal carotid and basilar arteries, and forming a beautiful chain of inosculations called the *circle* of Willis.

By removing a portion of the substance of the brain, we see that it is composed of a white and grey matter, hence called the medullary and cineritious. By dividing in a particular direction, the largest surface of this white matter is brought into view, and is called the *centrum ovale*. If the cerebellum be now sliced in the same manner, a beautiful arborescent appearance is exposed, called the *arbor vitæ*, or *tree of life*.

Proceeding with the examination of the brain, the next step is to separate the hemispheres from each other. Between them lies the falx major, consisting of a duplicature of the dura mater, and having the superior and inferior longitudinal sinuses at its upper and lower edges. The left hemisphere being now divided, we can see the shape and course of the corpus callosum, the pineal gland—philosophers have supposed this to be the seat of the soul, in the substance of which is discovered three or four grains of hard substance—and the situation of the lateral ventricles or cavities, so often found filled with blood or serum in those who die of apoplexy.

By examining the interior of the base of the cranium after the brain has been removed, we see the situation and course of the lateral sinuses, the first commencement of the spinal marrow, and the exit of the corebral nerves from the skull to proceed to their several destinations.

ADONIS.



"Man studies the nature of other Animals, and adapts his conduct to their constitution; himself alone he continues ignorant of, and neglects."

THE ADONIS.

This figure was the last work and *chef-d'-œuvre* of the late Signore Serantoni of Florence. For thirty years this lamented man was the dissector at the Theatre of Anatomy at Florence; his continual application to study, and his anxiety to complete the works he had undertaken, at length undermined his health, and almost deprived him of eye-sight. He died on the 15th August 1837.

The exterior of this full-length figure of Adonis is extremely beautiful, and may be studied as a model for the painter or the sculptor. It is laid upon the couch in an easy posture of repose, and in such a position as to allow the anatomy of the posterior portion of the human body to be seen. The integument is first taken from the surface of the trunk and extremities, and we thus see the parts which lie immediately beneath the skin.

INTRODUCTION TO MUSCLES.

The man who has never examined and studied the mechanism and functions of the muscles is apt to conclude, that the flesh is a solid mass, without any other use than to cover the bones, and constitute by its bulk the external portion of the body. But when he minutely examines its anatomy and physiology, he perceives that it is mechanically constructed, and separated into long, broad, thin layers, lying side by side, and above each other, and that each muscle is composed of long, slender fibres, each enclosed in its own cellular sheath, and that individually and combined, they perform every motion of the animal machine. It is the muscular system that chiefly distinguishes the activity of animals from vegetables, and gives the faculty of locomotion to the one, and immovability to the other. There are about 450 muscles in the human subject, 225 on each side, with a numerical difference in the male and female.

On the *face* we notice the greater number of those small muscles of expression described with the first figure, the situation of the parotid or salivary gland, and course of the stenonian or excretory duct, opening into the mouth, the distribution of the pes anserinus of the portio dura, and various offsets from arterial and venous trunks. The zygomatic arch is not taken away, so that we can see the muscles which arise from its lower edge, and the passage of the tendon of the temporalis beneath. The anterior portion of the occipito-frontalis (a muscle that covers the cranium, pulls the skin

of the head backwards, raises the eye-brows upwards, at the same time wrinkles the skin of the forehead,) is placed over the forehead, and has distributed over it many arterial and nervous filaments. Spasm of this muscle causes lock-jaw. The *buccinator* or trumpeter's muscle, is also rendered very easy of demonstration.

The whole of the back is covered with strong muscles, related to the arms, ribs, and spine. The principal of these consist of the trapezius and latissimus dorsi of each side. Some of those more deeply seated being apparent at parts which are not covered by the superficial layer. The trapezius is one of the most beautiful muscles of the body. The two conjoined, one on each shoulder and on the neck, extend from the tip of the one shoulder to the tip of the other; and from the nape of the neck down to the loins; when they reach the top of the neck, they become tendinous. This muscle is not attached to the spine until it reaches the last two vertebræ of the spine. Its action may be either to draw backwards the head, or to elevate the shoulders.

The form of the *latissimus dorsi* is triangular, occupying the whole of the posterior part of the lumbar region. Its origin may be traced from the lower dorsal and all the lumbar and sacral vertebræ, from the iliac bone, and by digitations from the three or four last ribs. Its fibres converge, slide over the inferior angle of the scapula, and in company with the teres major, become inserted into the upper part of the humerus or arm bone. This powerful muscle acts in various ways. Thus it usually tends to draw the arm down forcibly, but it may elevate the trunk, or raise the ribs in the act of inspiration.

The *upper extremities* should next be examined; if we look at the shoulder of either, and but more especially of the right arm, we see the *deltoid* beautifully exposed. This is a powerful muscle, taking its origin from the clavicle and scapula to be inserted into the upper part of the humerus. Its name is taken from its shape somewhat resembling the Greek letter Delta, and its action is to raise the arm directly from the side.

Below the insertion of the deltoid, part of the *brachialis anticus* and *biceps* muscles come into view, being the principal flexors of the fore-arm; and lying at the back part we see a portion of the *triceps extensor cubiti*, which, by its attachment to the humerus and olecranon process of the ulnar bone, acts as the principal straightener of that part.

Below the elbow on the left side, we can see many of those muscles and vessels which have been previously described in the female figure. The *right* fore-arm, however, in the Adonis, being placed in a state of pronation, the anatomy of the back part can be inspected. The human hand is the most beautiful and perfect piece of mechanism in nature, and in its fingers are seated the organs of touch. The *common extensor* of the fingers is seen fleshy above and dividing below into four tendons, which pass beneath the annular or ring of the wrist to be inserted into the phalanges of the fingers. The little finger has one little muscle appropriated to itself,

called the *extensor digiti minimi*, which may be seen running down to the outer side of the last named, and its tendon uniting with the fourth division of the same. The *extensor carpi ulnaris* is placed still more external, and being inserted into the fifth metacarpal bone, serves to draw the wrist backwards. Many small vessels, both arteries and veins, are seen running in various directions with cutaneous branches of the brachial nerves.

The right arm is now separated from its muscles and membranes, leaving the skin and bones in their relative positions. We are thus able to notice that there is but one bone in the upper arm called the *humerus*, which unites at the elbow joint with the two bones of the fore-arm called the *ulna* and the *radius*. Between these latter are stretched strong membranous fibres, which have the name of the interosseous ligament. On it may be observed the posterior interosseous artery and veins coming from the ulnar. This view of the figure is one of considerable interest, as we can see by it the relation which the bone bears to the surface, and by considering the course of the great vessels, we can judge of the most proper places to compress them when wounded.

From the upper we now proceed to the lower extremities, and must first notice the large fleshy mass of the *gluteus maximus*, a broad radiated muscle on which we sit, situated behind the pelvis, and forming the greater part of the prominence of the nates. This muscle arises from the sacrum, coccyx, and ileum, and its coarse fibrous bands pass downwards and outwards, to be inserted into the femur below the great trochanter. Below the edge of the gluteus maximus are situated three muscles which constitute the substance of the back part of the thigh. These are, the *biceps* on the outer side, inserted into the fibula forming the outer ham-string, and the *semi-membranosus* and *semi-tendinosus* attached to the tibia, so as to complete the popliteal space on the inner side. All these muscles are of great importance in keeping the body erect when standing, and assisting in the act of progression.

Below the knee, and occupying the whole of the posterior surface of the lower leg, is placed the *gemellus*, so named from its double appearance. It constitutes the greater part of the calf, and arises by two heads from the lower part of the femur, and terminates in a strong tendon, classically called the *tendo Achilles*. This is inserted into the calcaneum, or bone of the heel, and is the strongest tendon in the body. The great use of this muscle is to raise the foot in walking or dancing, and hence its great size in those who practice much these exercises. On the left leg the *peroneus longus*, a muscle which draws the foot outwards, and also assists in extending it, and *brevis*, an assistant muscle of the last named, may be observed lying to the outer side, and their tendons passing round the external ancle to the under part of the foot.

On looking at the sole of the foot of the right leg, we see a strong white fibrous membrane called the *plantar fascia*. This is similar to the palmar fascia in the hand, and serves to bind down the mus-

cles and tendons placed beneath. To its inner side may be observed a part of the *flexor brevis*, or short flexor of the toes, and also the abductor pollicis, which separates the great toe from the rest of the toes.

Deep between the ham-string muscles above described is the popliteal space, in which may be observed the femoral artery after its emergence through the adductor magnus muscle. It is here that the vessel becomes operated upon for the disease called popliteal aneurism.

Most of the vessels seen in this preparation have been previously described in the female figure. The *external saphenous vein* is seen running on the surface of the gastrocnemius, or calf of the leg, and pouring its contents into the popliteal vein. The nerves are numerous, chiefly cutaneous branches from the external cutaneous and great sciatic. The *external saphenous nerve* is, however, seen by the side of the vein, and the *small sciatic nerve* issuing from under cover of the gluteus maximus, and terminating a little below the knee-joint.

By removing the flesh in the leg as in the arm, the bony structure of the lower extremity is seen. Above is the femur or thigh-bone, passing obliquely downwards, and forming the knee-joint with the tibia and patella. In the joint may be observed the *semi-lunar* half-moon shaped *cartilages*, and behind the *posterior ligament*. The lower leg has two bones, the larger called the tibia, the smaller the fibula. Between them is stretched the interosseous ligament, pierced in various places for the passage of vessels. In this beautiful preparation we can notice every little minutia, even the blood-vessels which serve for the nourishment of the bones, with the mode of their ingress and egress. The relation of the bones to the surface can be accurately examined, and the position with regard to them of every blood-vessel and nerve.

When the extremities have been examined, the *back* is again opened—the muscles, both superficial and deep-seated, are removed, together with the ribs and the posterior portion of the vertebral column. A view is then obtained of the thoracic and abdominal cavities, with the whole *spinal system of nerves*. In the chest we see the back part of the lungs, and the way in which they are packed together, covered closely by the pleura, a portion of which is detached on the left side. Below them the diaphragm is seen; and beneath, we have a view of the liver, pancreas, spleen and kidneys, in their relative positions, described in the Venus.

SPINE.

The *spinal cord* is an elongated mass of brain-like substance enclosed in the vertebral canal, and extending from the lower border of the medulla oblongata, (a substance that lies within the cranium,) as far as the first or second lumbar vertebra. It is covered like the brain with three tunics, the outer and stronger of which, a continuation of the dura mater, is here distinctly visible. The cord is of

a roundish figure, flattened somewhat from before backwards, and has distinct grooves on its anterior and posterior surfaces, by which it appears to be divided into two lateral halves.

It gives origin to thirty-one pairs of nerves. Each of these has two roots, the power of motion depending on the anterior, while that of sensation depends on the posterior branch. The posterior root may be observed to rise by fibres from the back part of the cord, and these soon unite together, forming a swelling or ganglion, (a natural knot-like enlargement): the anterior branch converges towards the same point, and unites with the posterior immediately exterior to the ganglion. A compound nerve is thus formed possessing the properties of motion and sensation. These junctions take place within tubular prolongations of the dura mater, which afterwards form the nervous investments. On the left side of the figure this tunic remains; on the right it is removed.

If we now enquire the manner of distribution of the spinal nerves, we find that they are divided into the cervical, brachial, lumbar, and sacral. Of the eight cervical pairs of nerves, the upper form the cervical, the lower with some of the dorsal form the brachial plexuses. These supply the parts about the neck and the upper extremities. The remaining dorsal correspond with the intercostal spaces, and may be seen running round the chest at the lower part of each rib in company with the intercostal vessels. The lumbar and sacral nerves interlace together, and form one elongated plexus, called the lumbo-sacral, from which arise the nerves which supply the cavity of the pelvis, and ramify with the vessels through the lower extremities.

After these parts have been inspected the cranium is opened, and the whole of the brain extracted. This part has been so minutely described in the account of the female figure, that we refer the reader to it without troubling him with a repetition. He may observe, however, in this cast the position of the *longitudinal and lateral sinuses* with their junction at the *torcular Herophili*, and a beautiful illustration of the *basilar artery*, and the distribution of its branches. An attentive examination of every minute portion of these wonderful figures will repay the attention not only of the general visitor, but the more experienced member of the medical profession.

The perusal of these pages will upon reflection, open to the reader the many convincing proofs of the cautious steps which nature has contrived, to keep up these "harps of thousand strings" in their proper order, tuning them with such precision, and with such delicacy, as to enforce the acknowledgement, that our attention should be directly given to the study of ourselves, it being of the most paramount importance, tending in its results to the avoidance of many evils which we are daily, and from ignorance, incurring, and foreseeing the incurable tendencies of such evils would prevent individuals from too hastily going to "that bourne from whence no traveller returns."

MEANS OF IMPROVING AND PRESERVING HEALTH.

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1. Habitual cheerfulness and composure of mind, arising from peace of conscience, constant reliance on the goodness of God, and the exercise of kindly feelings towards men. Peace of mind is as essential to health as it is to happiness.

2. Strict control over the appetites and passions, with a fixed abhorrence of all excess and all unlawful gratifications whatsoever. He that would enjoy good health must be 'temperate in all things,' and habitually exercise the most rigid self-government; for every sort of vicious indulgence is highly injurious to health; first, *directly*, in its immediate effects on the body; and next, *indirectly*, in the perpetual dissatisfaction and anxiety of mind which it invariably occasions.

3. Early rising; and in order to this, take no supper, or if any, a very slight one, and go early to bed. *The hour before bed-time* should be spent in agreeable relaxation, or in such exercises only as tend to compose the mind and promote inward peace and cheerfulness.

4. Simplicity, moderation, and regularity with respect to diet. A judicious selection of the articles of food, the careful avoiding of unwholesome dainties, and whatever has proved hurtful to the constitution. The quantity of food should be proportioned to the amount of exercise a person undergoes. Sedentary people should be rather abstemious; their food should be nutritious, easy of digestion, and moderate in quantity. Seldom eat anything between the regular meals.

5. To be very sparing in the use of wine and other stimulants. They may sometimes be employed to advantage in cases of extreme debility or extraordinary labour; but, under any circumstances, if too freely or too frequently indulged in, they will most certainly impair your health and shorten your life.

6. Take your meals with as much quiet and comfort as possible. Bustle, vehement discussion, bad news, disagreeable companions, and all vexatious excitement, should be carefully excluded at meal-times.

7. Eat very slowly, with a view to the thorough mastication of your food: rather forego a meal, or take but half the needful quantity, than eat too fast.

8. Refrain from both mental and bodily exertion for a short time after the principal meal. If immediate exertion be required, only a slight repast should be taken instead of the usual meal. N.B.—Never eat a full meal when the body is heated or much fatigued with exercise. Wait till you are somewhat refreshed by a short interval of repose. If faint, a little soup may be taken meanwhile.

9. Occasional abstinence. Whenever the system is feeble or disordered, diminish the quantity of your food, and allow yourself more time for exercise. In cases of slight indisposition, a partial or a total fast will often be found the best restorative.

10. Take no physic, unless it be absolutely necessary. Learn, if possible, how to keep well without it. In case of real indisposition, consult a competent medical adviser without delay; and implicitly attend to his directions, so far as you think he is fully acquainted with your constitution, and with the best means of treating your disorder. Never risk your health and life either by neglecting serious illness, or by tampering with quack remedies.

11. Gentle exercise should be taken regularly two hours a-day at least; and it must never be forgotten that cheerfulness is an essential ingredient in all beneficial exercise. Mental relaxation in agreeable society, too, should be sought as often as due attention to business and other important affairs will permit.

12. The importance of cleanliness of dress and person in every particular must not be overlooked. The thorough ventilation of apartments also, an appearance of *neatness* and *orderly arrangement* in every part of our habitation, contribute, though indirectly, yet certainly and powerfully, to promote both health and cheerfulness: as the contrary state of things is generally found to produce discomfort, nervous irritation, and depression of spirits.